Notes on DataBase Lecture 1

slide 6

The existence of the information system is partly independent of the extent to which it is automated: note that information systems existed long before the invention and widespread adoption of computers; for example, bank records and electoral rolls have been in place for several centuries

slide 11

Databases are shared, in the sense that various applications and users must be able to gain access to data of common interest. It is important to note that in this way the redundancy of data is reduced, since repetitions are avoided, and, consequently, the possibility of inconsistencies is reduced; if more than one copy of the same data exist, it is possible that they are not identical; and vice versa, if every piece of data is stored only once, then the problem of inconsistency is eliminated. In order to guarantee shared access to data by many users operating simultaneously, the DBMS makes use of a special mechanism called concurrency control.

slide 12

Effective interested in the output regardless the input while efficient is a relation between input and output (output/input)

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slide 19

The *relational data model*, at present the most widespread, provides the *relation* constructor, which makes it possible to organize data in a collection of records with a fixed structure. A relation is often represented by means of a table, whose rows show specific records and whose columns correspond to the fields of the record; the order of rows and columns is irrelevant.

slide 23

Logical independence guarantees that the interaction with the external level of the database is independent of the logical level. For example, it is possible to add a new external schema according to the demands of a new user or to modify an external schema without having to modify the logical schema and therefore the underlying physical organization of the data. At the same time, it is possible to modify the logical level, maintaining unchanged the external schema of interest to a given user (provided that its definition in terms of the logical structures is adjusted).

slide 27

END USER : who use *transactions*, that is, programs that carry out frequent and predefined activities, with few exceptions known and taken into account in advance.

Casual User: able to use the interactive languages to gain access to the database